

A Risk Screening Process for Demonstrating Chemical Stewardship in the E&P Industry



GOALS AND OBJECTIVES

- **Reasons for Chemical Risk Screening**
- **Concept of Chemical Risk**
- **Concept of Chemical Stewardship**
- **Description of the Noble Energy Chemical Risk Prioritization Scoring Process**
- **Challenges**

REASONS FOR CHEMICAL RISK SCREENING

- **Potential Regulatory Drivers**
- **Demonstrates Chemical Stewardship**
- **Identifies Chemicals Requiring Further Risk Characterization and Management**
- **Identifies Chemicals Where No Additional Concern is Warranted**

WHAT IS NOT IN THE SCOPE

- **Target Certain Chemicals for Elimination**
- **Dictate What Chemicals Can be Used**
- **Provide Formal Human or Ecological Risk Assessments**

CONCEPT OF CHEMICAL RISK

Chemical Risk = Hazard x Exposure

- **Hazards Can Potentially Occur for Both Human and/or Ecological Receptors**
- **Exposures Can Potentially Occur to:**
 - ▲ **Humans**
 - ▲ **Ecological receptors, and**
 - ▲ **Throughout the life cycle of the chemical**

CONCEPT OF CHEMICAL STEWARDSHIP

- **Making EHS Protection an Integral Part of the Chemical Life Cycle**
- **Extends Beyond Regulatory Compliance**
- **A Continued Commitment to Assessing and Mitigating the Chemical-Related Risks**
- **Partnerships within the Company's Drilling, Operations and Supply Chain Groups, as well as with Third Party Service Providers**

CHEMICALS IDENTIFIED FOR RISK SCORING

Compile the List of Chemicals

1

A red-outlined downward-pointing arrow with the number 1 inside, indicating the first step in the process.

Exclude Chemicals Based on Exclusion Criteria

2

A red-outlined downward-pointing arrow with the number 2 inside, indicating the second step in the process.

List of Chemicals to be Evaluated for Human and Aquatic Hazard and Persistence/Bioaccumulation Scoring

3

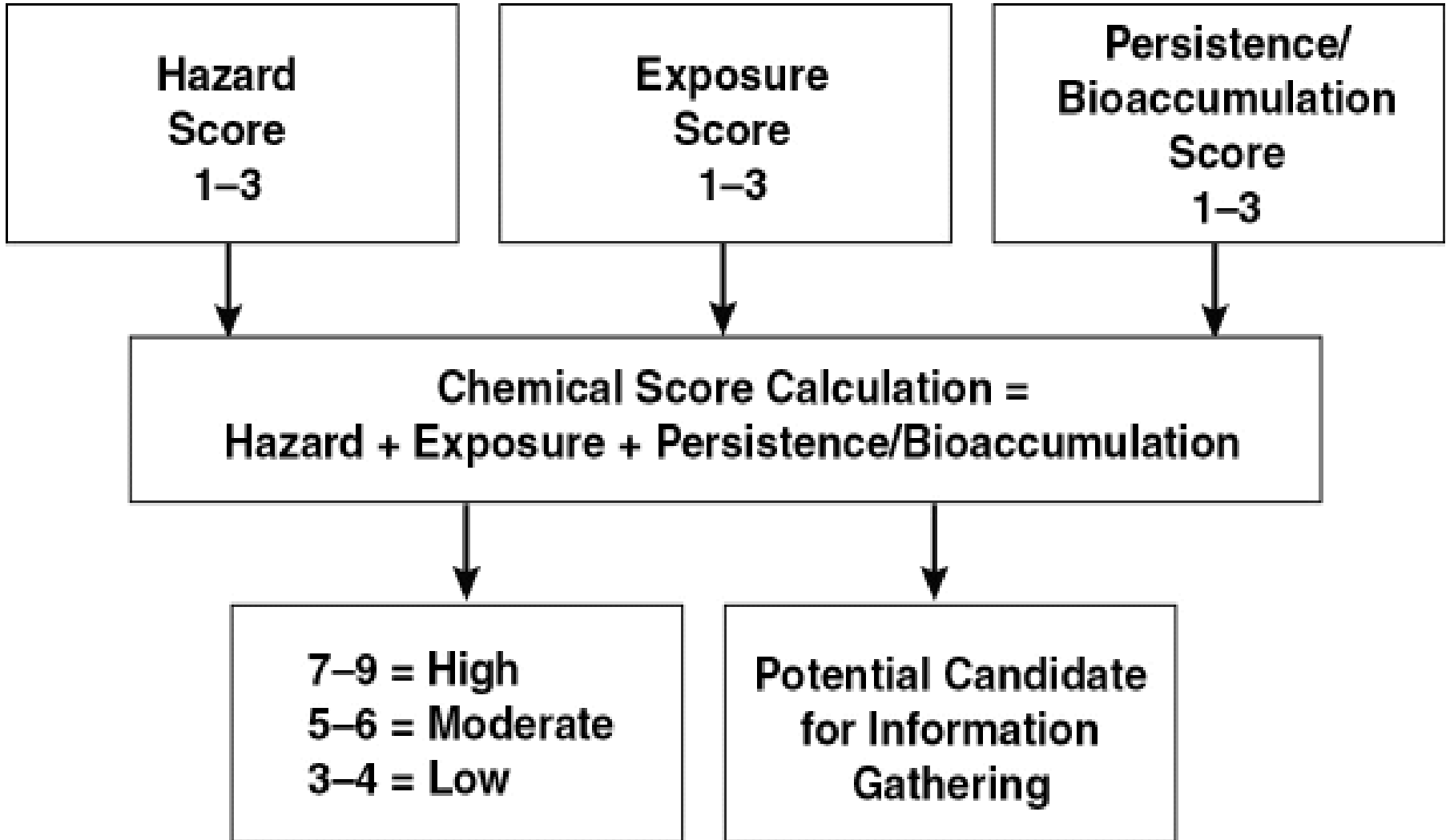
A red-outlined downward-pointing arrow with the number 3 inside, indicating the third step in the process.

List of Chemicals to be Evaluated for Exposure Scoring

CHEMICAL EXCLUSION CRITERION LIST

- **Consumer Products and Office Supplies**
- **Generally Recognized as Safe (GRAS)**
- **Materials Intrinsically Derived from E&P**
- **Highly Controlled Chemicals Based on Existing Safety Plans, Low Volumes, or Limited Potential for Exposure**
- **Physical or Corrosive Hazards Only**

CHEMICAL RISK SCORING



EXPOSURE QUESTIONNAIRE

- **Based on Annual Volume of Chemical Use**
- **Volume Potentially Released to Environment During Normal Use**
- **Number of Points Where the Product is Used**
- **Likelihood of Product Which Under Normal Use Has the Potential for:**
 - ▲ **Human Exposure**
 - ▲ **Ecological Exposure**

CHALLENGES

- **Product Level vs. Chemical Constituent Level Risk Scores**
- **Acceptable Data Sources**
- **Data Gaps**
- **Confidential Business Information**

Questions?

***Thank
You!***